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Li et al.

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(54) **UNLOADING MECHANISM**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,990,051 A * 2/1991 Safabakhsh H01L 21/67132
156/707
6,173,750 B1 * 1/2001 Davis H01L 21/67144
156/707

(Continued)

FOREIGN PATENT DOCUMENTS

TW 1268532 12/2006
TW M420824 U1 1/2012
TW 1406752 B1 9/2013

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(57) **ABSTRACT**

A unloading mechanism for removing workpieces from a transporting film can include a loading assembly and a unloading assembly coupled to the loading assembly. The loading assembly can include a base, a first driving member and an absorbent member. The base can include a base body, a first guiding member slidably extending through the base body, and a plurality of pushing members coupled to the base body. The first driving member can be coupled to the base body. The absorbent member can be coupled to the first guiding member. The absorbent member can define a plurality of receiving holes, and the pushing members can be received in the receiving holes. The unloading assembly can include a second driving member coupled to the first driving member, and a stopping member coupled to the second driving member adjacent to the absorbent member.

20 Claims, 4 Drawing Sheets

